

CLAIMS

We claim:

1. A system for lubricating components of a drive
5 line adapted to drive the wheels of a motor vehicle, the
system comprising:

a power transmission including a first output;

a first lubrication circuit;

a second lubrication circuit;

10 a first sump for containing hydraulic fluid;

a transfer case adapted for a drive connection to
the first output, including a second sump for containing
hydraulic fluid, and a second output adapted for a drive
connection to at least one driven wheel;

15 a first pump driveably connected to the second
output, hydraulically connected to the first sump and the
first lubrication circuit; and

a second pump driveably connected to the second
output, hydraulically connected to the second sump and
20 the second lubrication circuit.

2. The system of claim 1, wherein the first
lubrication circuit and the first pump are located in the
transfer case.

25

3. The system of claim 1, wherein the first
lubrication circuit is located at least partially in the
transfer case.

30 4. The system of claim 1, wherein the second
lubrication circuit is located at least partially in the
transmission.

5. The system of claim 1, wherein:
35 the first pump and second pump are located in the
transfer case;

the first lubrication circuit is located at least partially in the transfer case; and

the second lubrication circuit is located at least partially in the transmission.

5

6. A system for lubricating components of a drive line adapted to drive the wheels of a motor vehicle, the system comprising:

an input;

10 a first output driveably connected to the input;

a first sump for containing a source of hydraulic fluid;

a first lubrication circuit;

15 a lube pump driveably connected to the first output and hydraulically connected to the first lubrication circuit; and

a scavenge pump driveably connected to said first output and hydraulically connected to the first sump.

20 7. The system of claim 6, further comprising:

a second output;

a transfer drive mechanism driveably connected to the first output and second output, at least a portion of the drive mechanism located in relation to the first sump
25 for movement through the fluid source.

8. The system of claim 6, further comprising:

a second output;

a clutch having a first set of friction elements
30 driveably connected to first output, and a second set of friction elements adapted driveably to engage and disengage the first set of friction elements, the clutch alternately driveably connecting and disconnecting the first output and second output; and

35 the first lubrication circuit further comprises fluid passages hydraulically connecting the lube pump to

the first set of friction elements and second set of friction elements.

9. The system of claim 6, further comprising:

5 a gearset including a sun gear, a ring gear, a carrier, and a set of planet pinions supported for rotation on the carrier, each pinion in meshing engagement with the sun gear and ring gear and journaled on a stub shaft supported on the carrier; and

10 the first lubrication circuit further comprises fluid passages hydraulically connecting the lube pump to at least a portion of the components of the gearset.

10. The system of claim 6, further comprising:

15 a bearing supporting the first output on the transfer case; and

the first lubrication circuit further comprises fluid passages hydraulically connecting the lube pump to the bearing.

20

11. The system of claim 6, further comprising:

a balance dam; and

the first lubrication circuit further comprises fluid passages hydraulically connecting the lube pump to
25 the balance dam.

12. The system of claim 6, further comprising:

a second output;

a transfer drive mechanism including a first
30 sprocket wheel journaled for rotation on the first output, a second sprocket wheel spaced from the first sprocket wheel and secured to the second output, and a drive chain driveably engaged with the first sprocket wheel and second sprocket wheel and located in relation
35 to the first sump for movement through the fluid source.

13. A method for supplying lubrication to a }
transmission and transfer case, the transmission and
transfer case each having a sump for containing hydraulic
fluid, the transfer case having an output adapted for a
5 drive connection to at least a first set of driven
wheels, the method comprising the steps of:

driveably connecting a first pump and a second pump
to the output;

defining a first circuit for carrying lubrication
10 fluid in the transfer case;

defining a second circuit for carrying lubrication
fluid in the transmission;

hydraulically connecting the first pump to the
transmission sump and to the first circuit; and

15 hydraulically connecting the second pump to the
transfer case sump and to the second circuit.

14. The method of claim 13, wherein the step of
defining a first circuit, further comprises the step of:
20 establishing fluid passages connecting the first
pump and a bearing located in the transfer case for
supporting the output on the transfer case.

15. The method of claim 13, wherein the step of
25 defining a first circuit, further comprises the step of:
establishing fluid passages connecting the first
pump and a clutch located in the transfer case for
alternately driveably connecting and disconnecting the
output and a second output.

30

16. The method of claim 13, wherein the step of
defining a first circuit, further comprises the step of:
establishing fluid passages connecting the first
pump and a balance dam located in the transfer case.

35

17. The method of claim 13, wherein the step of
defining a second circuit, further comprises the step of:
establishing fluid passages connecting the second
pump and a surface supporting rotating components located
5 in the transmission.